Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-103. (Canceled)

104. (Previously Presented) A stem cell marker characterized by binding to a GCTM-5 antibody or active fragment thereof.

105. (Previously Presented) The stem cell marker according to claim 104 which migrates on an SDS-PAGE gel with an apparent molecular weight of 50kDa.

106. (Previously Presented) The stem cell marker according to claim 104 wherein the GCTM-5 antibody or fragment is produced by a hybridoma having an ECACC accession number 03101603.

107. (Previously Presented) The stem cell marker according to claim 104 comprising a GCTM-5 epitope or equivalent or a GCTM-5 antigen.

108. (Currently Amended) The stem cell marker according to claim 104 of a cell selected from the group consisting of: a ductal cell including a biliary cell or a biliary epithelial cell; a hepatoblast; a pancreatic stem cell; an endodermal stem cell; a hepatic stem cell; a hepatic progenitor cell; a pancreatic stem cell; ~~and~~ a pancreatic progenitor cell a hepatic cancer cell; and a pancreatic cancer cell.

109. (Previously Presented) A detector of a cell type which identifies on the cell type a cell marker according to claim 104.

110. (Previously Presented) The detector according to claim 109 which is an antibody, fragment or equivalent thereof, ligand or complimentary molecule to the cell marker.

111. (Previously Presented) The detector according to claim 109 which is an antibody, fragment or equivalent thereof.

112. (Previously Presented) The detector according to claim 109 which is a GCTM-5 antibody or active fragment thereof.

113. (Previously Presented) The detector according to claim 109 which can compete against a GCTM-5 antibody for binding.

114. (Previously Presented) The detector according to claim 112 that is produced by a hybridoma having an ECACC accession number 03101603.

115. (Previously Presented) The detector according to claim 109 which detects the cell marker on a stem cell.

116. (Previously Presented) The detector according to claim 109 which detects the cell marker on a sub population of stem cells.

117. (Currently Amended) The detector according to claim 109 wherein the stem cell is selected from the group consisting of: a hepatoblast; a hepatic stem cell; a hepatic progenitor cell; a pancreatic stem cell; ~~and~~ a pancreatic progenitor cell; a hepatic cancer cell; and a pancreatic cancer cell.

118. (Previously Presented) The detector according to claim 115 wherein the stem cell is a cell of the biliary epithelium.

119. (Previously Presented) The detector according to claim 115 wherein the stem cell is proliferating.

120. (Previously Presented) A hybridoma which produces an antibody to a cell marker according to claim 104.

121. (Previously Presented) A hybridoma which produces a GCTM-5 antibody or fragment thereof.

122. (Previously Presented) The hybridoma according to claim 121 which has an ECACC accession number 03101603.

123. (Previously Presented) A method of identifying a sub-population of stem cells in a cell sample, said method including:

identifying the stem cells which express a marker according to claim 104.

124. (Currently Amended) The method according to claim 123 wherein the subpopulation of stem cells includes a cell selected from the group consisting of: a hepatoblast; a hepatic stem cell; a hepatic progenitor cell; a pancreatic stem cell; a pancreatic progenitor cell; a biliary cell; ~~and~~ a biliary epithelial cell; a hepatic cancer cell; and a pancreatic cancer cell.

125. (Previously Presented) The method according to claim 124 wherein the stem cell or progenitor cell is proliferating.

126. (Previously Presented) The method according to claim 123 wherein the stem cells are identified by a GCTM-5 antibody or fragment thereof.

127. (Previously Presented) The method according to claim 126 wherein the GCTM-5 antibody or fragment thereof is produced by a hybridoma having an ECACC accession number 03101603.

128. (Previously Presented) The method according to claim 123 further comprising subjecting the stem cells to markers selected from the group including N-CAM, HEA–125, CK-19, harmonin and Ep-CAM.

129. (Previously Presented) A method of isolating a sub population of stem cells, said method comprising:

isolating the stem cells which express a marker, said marker according to claim 104.

130. (Currently Amended) The method according to claim 129 wherein the subpopulation of stem cell includes a cell selected from the group consisting of: a hepatoblast; a hepatic stem cell; a hepatic progenitor cell; a pancreatic stem cell; a pancreatic progenitor cell; a biliary cell; ~~and~~ a biliary epithelial cell; a hepatic cancer cell; and a pancreatic cancer cell.

131. (Previously Presented) The method according to claim 130 wherein the stem cell or progenitor cell is proliferating.

132. (Previously Presented) The method according to claim 129 wherein the cells are isolated using a GCTM-5 antibody, fragment or equivalent thereof.

133. (Previously Presented) The method according to claim 132 wherein the GCTM-5 antibody or fragment thereof is produced by a hybridoma having an ECACC accession number 03101603.

134. (Previously Presented) The method according to claim 129 further comprising isolating cells that select for or against markers, said markers selected from the group including N-CAM, HEA-125, CK-19, harmonin and Ep-CAM.

135. (Previously Presented) A subpopulation of cells which express a marker according to claim 104.

136. (Previously Presented) A subpopulation of stem cells prepared by the method according to claim 129.

137. (Currently Amended) The subpopulation according to claim 135 comprising a cell selected from the group consisting of: a hepatoblast; a hepatic stem cell; a hepatic progenitor cell; a pancreatic stem cell; a pancreatic progenitor cell; a biliary cell; ~~and~~ a biliary epithelial cell; a hepatic cancer cell; and a pancreatic cancer cell.

138. (Previously Presented) The subpopulation according to claim 135, wherein the stem cells or progenitor cells are proliferating.

139. (Previously Presented) The subpopulation according to claim 135 including liver cells.

140. (Previously Presented) The subpopulation according to claim 135 including pancreatic cells.

141. (Previously Presented) An isolated cell which expresses a marker according to claim 104.

142. (Previously Presented) An isolated cell derived from a subpopulation according to claim 135.

143. (Currently Amended) The isolated cell according to claim 141 which is a cell selected from the group consisting of: a hepatoblast; a hepatic stem cell; a hepatic progenitor

cell; a pancreatic stem cell; a pancreatic progenitor cell; a biliary cell; ~~and~~ a biliary epithelial cell; a hepatic cancer cell; and a pancreatic cancer cell.

144. (Previously Presented) The isolated cell according to claim 141 wherein the stem cell or progenitor cell is proliferating.

145. (Previously Presented) A method of culturing a hepatic or pancreatic stem cell or progenitor cell, said method comprising:

isolating the cells which express a marker according to claim 104; and

culturing the cells.

146. (Previously Presented) The method according to claim 145 wherein the isolated stem cell is a hepatoblast.

147. (Previously Presented) The method according to claim 145 wherein the hepatic or pancreatic stem cell or progenitor cell is further differentiated to a cell selected from the group including a hepatoblast, liver, hepatic or pancreatic cell.

148. (Previously Presented) The method according to claim 147 wherein the hepatic stem cell is further differentiated to a liver cell.

149. (Previously Presented) The method according to claim 147 wherein the hepatic stem cell is further differentiated to a pancreatic cell.

150. (Previously Presented) The method according to claim 145 wherein the hepatic stem cell is proliferating.

151. (Previously Presented) A use of the cells which express a marker according to claim 104, said use selected from the group including transplantation, ex vivo expansion, reprogramming to generate other cell types and for identifying new therapeutic agents that may affect how these cells live, grow, replicate, differentiate and die.

152. (Previously Presented) A method of treating a liver disorder in a patient, said method comprising:

isolating a liver stem cell by a method according to claim 129; and

transferring the liver stem cell to the patient.

153. (Previously Presented) The method according to claim 152 wherein the liver stem cell is a hepatoblast.

154. (Previously Presented) The method according to claim 152 wherein the liver stem cell is proliferating.

155. (Previously Presented) The method according to claim 152 wherein the liver stem cell is caused to further differentiate to a liver cell.

156. (Previously Presented) The method according to claim 154 wherein the liver disorder is selected from the group including PBC, EHBA or ALD.

157. (Previously Presented) A method of treating a pancreatic disorder in a patient, said method comprising:

isolating a liver stem cell by a method according to claim 129; and

transferring the liver stem cell to the patient.

158. (Previously Presented) The method according to claim 157 wherein the liver stem cell is a hepatoblast.

159. (Previously Presented) The method according to claim 157 wherein the liver stem cell is proliferating.

160. (Previously Presented) The method according to claim 157 wherein the liver stem cell is caused to further differentiate to a pancreatic cell.

161. (Previously Presented) The method according to claim 157 wherein the pancreatic disorder is diabetes.

162. (Previously Presented) A method of treating a liver or pancreatic cancer, said method comprising:

delivering a toxin conjugated to a GCTM-5 antibody or active fragment thereof to a liver or pancreatic stem cell or liver or pancreatic progenitor cell in the liver or pancreatic cancer, wherein the cell expresses a marker according to claim 104.

163. (Previously Presented) The method according to claim 162 wherein the liver or pancreatic stem cell or progenitor cell is proliferating.

164. (Previously Presented) A method of diagnosing or monitoring a liver or pancreatic condition in a patient, said method comprising:

detecting GCTM-5 antigen, epitope or equivalent in a biological sample.

165. (Previously Presented) The method according to claim 164 wherein the GCTM-5 antigen, epitope or equivalent is detected with a GCTM-5 antibody, or fragment thereof.

166. (Previously Presented) The method according to claim 165 wherein the GCTM-5 antibody or fragment is produced by a hybridoma having an ECACC accession number 03101603.

167. (Previously Presented) The method according to claim 164 wherein the biological sample is body fluid or a tissue sample.

168. (Previously Presented) The method according to claim 164 wherein the liver condition is selected from the group including PBC, EHBA, ALD, transplantation of liver stem cells and in vivo expansion of liver stem cells.

169. (Previously Presented) The method according to claim 164 wherein the pancreatic condition is selected from the group consisting of diabetes, pancreatic malignancies, transplantation of pancreatic stem cells and in vivo expansion of pancreatic stem cells.

170. (Previously Presented) A kit for detecting a cell marker, said kit comprising a detector which detects the marker according to claim 104.

171. (Previously Presented) The kit according to claim 170 which detects a cell marker on a subpopulation of stem cells or in a biological sample.

172. (Currently Amended) The kit according to claim 170 which detects the cell marker on a cell selected from the group consisting of: a hepatoblast; a hepatic stem cell; a hepatic progenitor cell; a pancreatic stem cell; a pancreatic progenitor cell; a biliary cell; ~~and~~ a biliary epithelial cell; a hepatic cancer cell; and a pancreatic cancer cell.

173. (Previously Presented) The kit according to claim 170 which detects the cell marker on a stem cell that is proliferating.

174. (Previously Presented) The kit according to claim 170 which detects the cell marker in a biological sample including cell culture, tissue culture, conditioned medium, tissue sample, blood, serum, plasma and other bodily fluids and biopsy samples.

175. (Previously Presented) The kit according to claim 170 wherein the detector is a GCTM-5 antibody or active fragment thereof.

176. (Previously Presented) The kit according to claim 175 wherein the antibody is produced by a hybridoma having an accession number ECACC 03101603.

177. (Previously Presented) A kit for isolating a subpopulation of stem cells, said kit comprising a detector for detecting cells expressing a marker according to claim 104 and a means to separate the cells detected by the detector.

178. (Currently Amended) The kit according to claim 177 which isolates a cell selected from the group consisting of: a hepatoblast; a hepatic stem cell; a hepatic progenitor cell; a pancreatic stem cell; a pancreatic progenitor cell; a biliary cell; ~~and~~ a biliary epithelial cell; a hepatic cancer cell; and a pancreatic cancer cell.

179. (Previously Presented) The kit according to claim 177 which isolates a stem cell that is proliferating.

180. (Previously Presented) The kit according to claim 177 which isolates a stem cell from a biological sample including cell culture, tissue culture, conditioned medium, tissue sample, blood, serum, plasma and other bodily fluids and biopsy samples.

181. (Previously Presented) The kit according to claim 177 wherein the detector is a GCTM-5 antibody or active fragment thereof.

182. (Previously Presented) The kit according to claim 181 wherein the antibody is produced by a hybridoma having an accession number ECACC 03101603.